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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 10/049,252 | 06/03/2002 | Heinrich Schenk | 12816-044US1 | 8421 |

7590 12/05/2006
Fish & Richardson
225 Franklin Street
Boston, MA 02110-2804

EXAMINER

MERED, HABTE

ART UNIT PAPER NUMBER

2616

DATE MAILED: 12/05/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

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| | | | |
|------------------------------|-----------------|------------------|--|
| Office Action Summary | Application No. | Applicant(s) | |
| | 10/049,252 | SCHENK, HEINRICH | |
| | Examiner | Art Unit | |
| | Habte Mered | 2616 | |

- The MAILING DATE of this communication appears on the cover sheet with the correspondence address -
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 September 2006.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 11-19 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 11-19 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 03 June 2002 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. The amendment filed on 9/12/2006 has been entered and fully considered.
2. Claims 1-10 are previously cancelled.
3. Claims 11-19 are pending.

Drawings

4. The drawings filed on 06/03/2002 are objected to because the labels used in the Figures are German and need to be translated into English. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. **Claims 11-19** are rejected under 35 U.S.C. 103(a) as being unpatentable over Gitlin et al (US 5, 163, 044), hereinafter referred to as Gitlin, in view of Langberg et al (US 6, 421, 377), hereinafter referred to as Langberg.

Gitlin teaches time recovery circuits at the receiver end.

7. Regarding **claim 11**, Gitlin teaches a method for receiving a received signal transmitted via a duplex transmission system (**See Figure 1 and Columns 1:5-10, 3:60-65**), the method comprising: receiving the received signal from a duplex transmission unit in the duplex transmission system (**See Column 1:15-20**); sampling the received signal wherein after sampling at twice the symbol rate, the received signal is equalized (**See Column 4:44-50**); and the equalized received signal is sampled again at once the symbol rate. (**See Columns 5:65-67, 6:1-5**)

Gitlin fails to disclose generating an echo compensation signal in an echo compensation device on the basis of a transmitted signal from the duplex transmission unit; combining the echo compensation signal with the sampled received signal to obtain an echo-compensated received signal; equalizing the

echo-compensated received signal; and outputting the echo-compensated received signal for further processing.

Langberg teaches system and method for echo cancellation over asymmetric spectra.

Langberg discloses generating an echo compensation signal in an echo compensation device on the basis of a transmitted signal from the duplex transmission unit (**See Figures 1 and 2B, element 180**); combining the echo compensation signal with the sampled received signal to obtain an echo-compensated received signal (**See Figure 3, elements 132 and 124, Columns 3:1-20, 5:59-67, and 6:1-12**); equalizing the echo-compensated received signal; and outputting the echo-compensated received signal for further processing (**See Column 8:30-35**).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Gitlin's apparatus by generating an echo compensation signal in an echo compensation device on the basis of a transmitted signal from the duplex transmission unit; combining the echo compensation signal with the sampled received signal to obtain an echo-compensated received signal; equalizing the echo-compensated received signal; and outputting the echo-compensated received signal for further processing. The motivation is to come up with a very adaptive echo canceller that can recover the original transmitted signal cost effectively.

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8. Regarding **claim 14**, Gitlin discloses a receiver arrangement for a duplex transmission unit (**See Figure 1 and Columns 1:5-10, 3:60-65**), the receiver arrangement comprising: a first sampling device for sampling a received signal from the duplex transmission unit at twice a symbol rate of the received signal (**See Column 4:44-50**); wherein the first sampling device and include an equalizer arranged between the first sampling device and the echo cancellation device to which the received signal sampled at twice the symbol rate by the first sampling device is supplied for equalization (**See Figures 1 and 2**); and wherein a second sampling device is provided to sample the received signal equalized by the equalizer at once the symbol rate (**See Columns 5:65-67, 6:1-5**).

Gitlin fails to disclose an echo compensator device for producing an echo compensation signal on the basis of a transmitted signal from the duplex transmission unit with the echo compensation signal being combined in the echo compensation device with the received signal sampled by the sampling device to obtain an echo-compensated received signal; and an equalizer for equalizing the echo-compensated received signal and for outputting the equalized and echo-compensated received signal for further processing;

Langberg discloses an echo compensator device for producing an echo compensation signal on the basis of a transmitted signal from the duplex transmission unit (**See Figures 1 and 2B, element 180**) with the echo compensation signal being combined in the echo compensation device with the received signal sampled by

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the sampling device to obtain an echo-compensated received signal (**See Figure 3, elements 132 and 124, Columns 3:1-20, 5:59-67, and 6:1-12**); and an equalizer for equalizing the echo-compensated received signal and for outputting the equalized and echo-compensated received signal for further processing; (**See Column 8:30-35**).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Gitlin's apparatus by an echo compensator device for producing an echo compensation signal on the basis of a transmitted signal from the duplex transmission unit with the echo compensation signal being combined in the echo compensation device with the received signal sampled by the sampling device to obtain an echo-compensated received signal; and an equalizer for equalizing the echo-compensated received signal and for outputting the equalized and echo-compensated received signal for further processing. The motivation is to come up with a very adaptive echo canceller that can recover the original transmitted signal cost effectively.

9. Regarding **claim 12**, Gitlin discloses the received signal is equalized using non-recursive filter. (**See Column 1:15-20; T/2 equalizer is a non-recursive filter and is even indicated in the Specification.**) Gitlin also discloses sampling the received signal at twice a symbol rate of the received signal. (**See Column 4:44-50**)

10. Regarding **claim 13**, Gitlin discloses a method, wherein the non-recursive digital filter has a set of coefficients unaltered during data transmission. **(See Column 7:25-40)**
11. Regarding **claim 15**, Gitlin discloses a receiver arrangement wherein the second equalizer includes a digital filter. **(See Figure 4, element 671 – FIR by definition is a non-recursive digital filter)**
12. Regarding **claim 16**, Gitlin discloses a receiver arrangement, wherein the second equalizer includes a non-recursive digital filter. **(See Column 4:60-67)**
13. Regarding **claim 17**, Gitlin discloses a receiver arrangement, wherein a set of coefficients of the second equalizer is set permanently. **(See Column 5:55-67 and Column 6:20-35)**
14. Regarding **claim 18**, Gitlin discloses a receiver arrangement, wherein the received signal is supplied to the first sampling device via a reception filter **(See Figure 1 and Columns 1:5-10, 3:60-65)**, the received signal being sampled at once the symbol rate by the second sampling device **(See Columns 5:65-67, 6:1-5)** and being equalized by the second equalizer **(See Column 4:44-50)** the received signal being supplied to the echo compensation device via a digital high-pass filter. **(Figure 1, element 25)**
15. Regarding **claim 19**, Gitlin discloses a receiver arrangement wherein the first equalizer includes digital non-recursive filter with adaptively settable filter coefficients **(See Figure 5, element 510)**, the first equalizer having a decision feedback equalizer connected in series with, the decision feedback equalizer **(See Figure 7, element 150)**

being configured to output the equalized and echo compensated received signal for further processing.

Response to Arguments

16. Applicant's arguments with respect to independent claims 11 and 14 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Habte Mered whose telephone number is 571 272 6046. The examiner can normally be reached on Monday to Friday 9:30AM to 5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hassan Kizou can be reached on 571 272 3088. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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HM

11-21-2006

A handwritten signature in black ink, appearing to read 'Hassan Kizou', is written over a horizontal line.

HASSAN KIZOU
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600